

Meagre as the above notes certainly are, still they will, I trust, in some measure supplement the paper by Taczanowski published in the 'Journal für Ornithologie' 1870, and also the papers of Salvin, Tristram, and other workers in the field of Algerian ornithology, which have from time to time appeared in the present Journal. In my opinion much good work remains to be done in the Aurès mountains, and also in the country round Biskra. Travelling is comparatively easy, and, in spite of sundry dark rumours to the contrary, the country is safe, with due precautions. So easily accessible as Algeria is from England, the wonder is that so few of our ornithologists have devoted their energies to a study of its bird-life, which exists in such great variety and under such varied and peculiar conditions.

XLII.—Notes on a 'Catalogue of the Accipitres in the British Museum' by R. Bowdler Sharpe (1874). By J. H. GURNEY.

[Continued from p. 452.]

IN my last paper, at p. 438, I referred to a female specimen of *Falco barbarus* in the British Museum as determined by Mr. Howard Saunders, who has since informed me that its sex was ascertained by a careful naturalist at Granada, also that he agrees with my identification of the species, and that the label "*Falco communis*" was not attached to the skin by him.

There remains but one group of Falcons for our consideration, the subgenus *Hierofalco*, which, as I have already withdrawn from it the Saker and Mexican Falcons included in it by Mr. Sharpe*, I shall treat as consisting of the Arctic Falcons only.

One of these, the dark Falcon of Labrador, which was obtained in that country by Audubon, who figured it under the name of *Falco labradora* †, is referred to in Mr. Sharpe's

* *Vide supra*, p. 443.

† *Vide* Birds of America, pl. 196.

volume as synonymous with *H. gyrfalco* ; but Mr. Dresser has shown, I think satisfactorily, in the P. Z. S. for 1875, p. 114, that it is specifically, or, at the least, subspecifically, distinct. An additional article on this subject, from the pen of Mr. Dresser, will be found in Rowley's 'Ornithological Miscellany,' vol. i. p. 185, where two figures are given of this Falcon in different stages of plumage. These are, so far as I am aware, the only published representations of this species, with the exception of Audubon's plate and of a very good photograph, which forms plate 4 of Vennor's 'Birds of Prey of Canada,' taken from one of two specimens killed in the neighbourhood of Montreal (where, however, this Falcon appears to be extremely rare), and preserved in the Museum of that city. Mr. Ridgway, in the 'Bulletin' of the Nuttall Ornithological Club, vol. v. p. 93, has fully described these specimens and also a third obtained subsequently, and presumably also in Canada ; and he has there suggested that this is the Falcon described by Pennant in his 'Arctic Zoology,' vol. ii. p. 208, under the title of the "Plain Falcon," and that it is consequently identical with *Falco obsoletus* of Gmelin. Pennant gives Hudson's Bay as the habitat of his "Plain Falcon ;" and his description has evidently been taken from a very dark-coloured Jerfalcon, which may very probably have been a specimen of *H. labradorus* (to adopt Mr. Dresser's spelling of that specific name) ; but as this is hardly a matter of absolute certainty, I think it safer to retain for the Labrador Falcon the specific name of *labradorus*, to which it is undoubtedly entitled.

Mr. Ridgway has also referred to this Falcon in the 'Land Birds of North America,' vol. iii. p. 118, and, besides giving Labrador as its habitat, states that it is also found to the "south and westward" of Labrador "in winter, and on the shores of Hudson's Bay ;" he likewise describes a specimen taken at or near Quebec.

With the above exceptions, I am not aware of any record of this Jerfalcon having been obtained elsewhere than in Labrador. I may add the following note of the dimensions of a specimen of this Falcon, presumably a female, from

Hopedale, Labrador, which is preserved in the Norwich Museum:—Wing 16·65 inches, tarsus 2·4, middle toe *s. u.* 2·2. A presumed male in the British Museum measures—wing 15 inches, tarsus 2·2, middle toe *s. u.* 2·15.

I propose now to refer refer to *H. gyrfalco*, the “Norwegian Falcon” of British naturalists, and best known in this country from Scandinavian examples, some of which have been the originals of the various figures of this Falcon which have from time to time been published. Of these, two important plates have appeared somewhat recently—one in Mr. Dresser's ‘Birds of Europe,’ the other in the late Mr. Gould's ‘Birds of Great Britain,’ in which latter work this species was afforded a place rather for comparison with the nearly allied Iceland Falcon than as a British species, no authentic instance being on record, so far as I am aware, of the occurrence of the true *H. gyrfalco* in the British Islands.

As regards the distribution of this Falcon in the Old World, detailed particulars of what has been hitherto ascertained will be found in the article on this species in Mr. Dresser's work already referred to; and to the information on this head there given I have only one fact to add, viz. that in the autumn of 1875 I was enabled, by the courtesy of Mr. Sharpe, to examine a nearly adult female of *H. gyrfalco* which belonged to Mr. Hume, and had been sent to Mr. Sharpe for examination, it having been supposed to be an immature example of “*Falco hendersoni*,” and alluded to as such in ‘Stray Feathers,’ vol. ii. p. 530. This specimen, which I agree with Mr. Sharpe in referring to *H. gyrfalco*, was obtained at Yarkand by the late Dr. Stoliczka on May 15, 1874.

Such of the Falcons of the genus *Hierofalco* as inhabit the regions of North America lying to the west of Greenland and Labrador, and are not referable either to *H. labradorus* or to *H. candicans*, have been the subject of some difference of opinion as to whether they should be referred to *H. gyrfalco**, to *H. islandus*, or, as has been suggested by Mr.

* Mr. W. H. Dall records the presence in some of the Aleutian Islands

Ridgway*, to an intermediate race, which he designates as *Hierofalco gyrfalco*, var. *sacer* †.

In June 1870, Professor Newton was so good as to show me some specimens of these Falcons which had been obtained in North-western America, and had been sent to him for examination by Professor Baird; and I then made a memorandum respecting them to the following effect:—

No. 51689 ‡. Adult male, from Yukon, at the mouth of the Porcupine River.

No. 43144½ §. Adult female, taken, with four eggs, at Fort Anderson, May 1864.

No. 1558. Adult female, taken, with two eggs, at Fort Anderson.

No. 1410. Immature male, from Nulato River.

The adult birds appeared to resemble the adult Grey Falcon of Iceland, except that they were less clear and bright in the light grey cross-barring on the back and upper surface; they had somewhat broader dark grey cross bars than

of a Jerfalcon, which, on the authority of Professor Baird, he refers to *H. gyrfalco*. (*Vide* Proc. Californian Society of Sciences, March 14, 1874).

* *Vide* Land Birds of North America, vol. iii. p. 117.

† Mr. Ridgway supposes this Falcon to be the "Speckled Partridge-Hawk," from Hudson's Bay, which Forster described in the *Phil. Trans.* for 1772, p. 382, and which he there calls *Falco sacer*; but, even if this identification be admitted as correct, which does not seem altogether certain, there is an objection to the specific name being so applied, as it was evidently proposed by Forster under the belief that the bird he was describing came so close to the "Sacre of Brisson" * * * "said by Belon to come from Tartary and Russia," that it might safely be assigned the same name in a latinized form; and as this was entirely a misapprehension, the 11th rule for nomenclature, issued by the British Association, seems to me to be a sufficient authority for dropping Forster's specific name, as calculated to cause a confusion between the Jerfalcon now under consideration and the very distinct "Sacre of Brisson," the Saker Falcon of the Old World.

‡ For a detailed description of this specimen *vide* Ridgway, *l. c.* p. 115.

§ This specimen is also described by Mr. Ridgway, at p. 116.

is usual in adult Grey Falcons from Greenland; the immature bird exactly resembled a young Icelandic specimen.

Professor Newton exhibited these specimens at a meeting of the Zoological Society, on June 9, 1870; and the following note respecting them occurs in the records of that meeting*, "The birds from Alaska Professor Newton referred without doubt to *F. islandicus*, though belonging to the darker phase of that form."

In a postscript, dated 6 May 1871, to a letter written by Professor Newton and published in the 'Proceedings of the Academy of Natural Sciences of Philadelphia' for 1871, p. 95, the Professor alludes to such of these specimens as were adult in the following words:—"These are adult, and differ from Icelandic examples only in being slightly darker."

In the autumn of 1872, the female Falcon marked No. 43144½ was again sent to this country, for examination by Mr. Dresser, and with it three other specimens of the same North-American race, respectively labelled No. 51690, No. 35451, and No. 43142. Of these the first two were males, adult, but one apparently older than the other, from Yukon, and the last a female, not quite adult, the exact locality of which was not specified.

After inspecting these specimens, for the opportunity of doing which I was indebted to the kind attention of Mr. Dresser, I made a memorandum to the effect that they seemed to me not to be separable from Icelandic examples, and more particularly one specimen, respecting which I made the following note:—"No. 35451, which seems the only very adult bird, agrees very well with a very adult male from Iceland†, which lived ten years in the Zoological Gardens, and is figured in Wolf's 'Zoological Sketches.'"

Mr. Dresser, on the contrary, arrived at the conclusion that the last-named four Falcons were all referable to *H. gyrfalco*; and it may be convenient that I should cite the following

* *Vide* P. Z. S. 1870, p. 384.

† This specimen is preserved in the Norwich Museum; it is noticeable that the comparison was made with a true Icelandic Falcon, and not with the Grey Falcon of Greenland, *H. holbælli*.

remarks from his observations on the subject in the P. Z. S. for 1875, p. 115. Speaking of the four specimens last enumerated as A, B, C, and D, Mr. Dresser says, "A, B, C, and D are undoubtedly identical with the Norwegian Jer Falcon;" and he proceeds to quote the following memoranda, made when the skins were before him, "Specimen A (No. 43144½), an adult female, compared with a female from Quickjock, Lapland; this specimen agrees so closely that I cannot trace the least difference, either in coloration, measurements, or any thing else; and as the two skins are made up much alike, I could not well tell them apart, except by the labels. Mr. Blanford, who is working with me, is also unable to discern any difference.

"Specimen B (No. 51690), a male, evidently adult, agrees closely with an old female from Lapland in my collection, but has the head darker and less streaked with white, and the back is also bluer than that of the Lapland specimen; doubtless the American bird is the older of the two.

"Specimen C (No. 35451), also a male, agrees tolerably well with my male bird from Lapland, but has the head darker*.

"Specimen D (No. 43142), 'female,' agrees very closely with a female from Lapland."

The likeness of specimen No. 43144½ to *H. gyrfalco* ought to have attracted my attention when I saw these skins; but, although it unfortunately failed to do so, it did not escape the more acute observation of Mr. Ridgway, who wrote thus respecting it, "Upon comparing this specimen with figures of a pair of var. *gyrfalco* by Wolf in Newton's 'Ootheca Wolleyana,' I can discern no difference at all"†.

Mr. Ridgway holds the opinion, already referred to, of the intermediate character of these North-American Falcons; and this opinion is so well stated in a communication with which

* This was the specimen which seemed to me to agree with a very adult *H. islandus* with which I compared it, as already mentioned.

† Vide 'Land Birds of North America,' vol. iii. p. 116, where this specimen is fully described, as are also two paler examples on the previous page.

he recently favoured me, that I think it may be useful to quote his own words on the subject. He writes thus :—" My own view (originally expressed in the Hist. N. Am. Birds) is that the arctic American (continental) bird is a race intermediate between *H. islandus* and *H. gyrfalco*, the lighter-coloured specimens approaching (in fact I do not see how they can be distinguished from) *H. islandus*, while the darker ones appear to me to be undistinguishable from *H. gyrfalco*; the majority of specimens, however, are about halfway between."

In a subsequent communication, dated in July of the present year, Mr. Ridgway remarks, " With some additional material, I see no reason to change the views already expressed."

In Mr. Sharpe's volume the same view is taken of these Falcons as is held by Mr. Dresser, the range of *H. gyrfalco* being there stated as extending from Northern Europe " across Northern Asia and North America " *. To me it seems a not unreasonable supposition that both *H. gyrfalco* and *H. islandus* may be found in arctic America; but I have not sufficient data to enable me to offer an opinion as to the specimens of an intermediate character alluded to by Mr. Ridgway.

Professor Newton, in his edition of Yarrell's ' British Birds,' vol. i. p. 47, gives some interesting particulars as to the differences existing between *H. gyrfalco* and *H. islandus* † in the measurements and proportional dimensions of the sternum and coracoid bones; and it is much to be desired that a corresponding examination and comparison of these bones could be made as regards the arctic Falcons of North America.

It is unfortunate that no adult specimen of a grey North-American Falcon from the countries west of Greenland and Labrador exists, so far as I am aware, in any British collection; and specimens that are not adult are not of very much

* *Vide* Sharpe's Cat. vol. i. p. 417.

† Professor Newton informs me that the sterna of *F. islandus* referred to in his work were all taken from Icelandic specimens.

service in establishing a diagnosis between the closely related races of the Grey Jer-Falcons.

The British Museum possesses a specimen obtained by Captain Kellett in California*, and another from Kotzebue Sound; the Norwich Museum has one example from Alaska and three from Hudson's Bay; but none of these Falcons are in adult dress. The following are the measurements of these six specimens:—

MALES.			
	Wing.	Tarsus.	Middle toe <i>s. u.</i>
	in.	in.	in.
Alaska †	15·05	2·00	1·95
Hudson's Bay †	14·80	2·10	1·80
Fort Churchill, Hudson's Bay ..	14·20	2·00	2·05
Gulf of California	14·30	2·15	2·05
FEMALES.			
Fort Churchill, Hudson's Bay ..	16·60	2·10	2·30
Kotzebue Sound	16·00	2·10	2·10

I may quote, for comparison with the above, the under-mentioned dimensions of six specimens, given by Mr. Ridgway in the 'Land-Birds of North America,' vol. iii. pp. 115, 116.

	Wing.	Tarsus.	Middle toe <i>s. u.</i>
	inches.	inches.	inches.
Three males §	13·35 to 14·25	2·15 to 2·40	1·80 to 1·95
Three females 	15·50 to 16·00	2·35 to 2·55	2·00 to 2·15

* In Mr. Sharpe's Cat., vol. i. p. 417, this specimen is stated to be from the remarkably southern locality of the Gulf of California.

† This specimen is from the Smithsonian Institution, and was there marked as a male; the sex of the others has been inferred from their dimensions.

‡ This example is as dark as some specimens of *H. labradorus*, but has the inner webs of the primaries regularly graduated with pale crossbars, instead of being irregularly mottled with buffy brown, as is usual in the Labrador Falcon; the central pair of rectrices are quite free from bars and spots, and the plumage of the mantle very nearly so. This specimen closely resembles the figure of the immature *H. gyrfalco* in Gould's 'Birds of Great Britain.'

§ One from Yukon, one from Nulato, Alaska, the third also from North-west America, but the exact locality not mentioned.

|| Two from Fort Anderson, the third also from North-west America, but the exact locality not mentioned.

I may also give, for comparison, the following dimensions of Scandinavian examples of *F. gyrfalco*, collected by the late Mr. Wolley, and preserved in the Norwich Museum, except one male, which is in the British Museum:—

	Wing. inches.	Tarsus. inches.	Middle toe <i>s. u.</i> inches.
Two males	14·20 to 14·50	2·00 to 2·10	2·05 to 2·10
Six females	15·50 to 16·25	2·05 to 2·20	1·95 to 2·10

I propose now to refer to the Grey Falcon of Iceland, the "*Hierofalco islandus*" of Mr. Sharpe's Catalogue, and the "*Falco islandus*" of Gmelin*.

Mr. Dresser, in the article on this species in the 'Birds of Europe,' after mentioning its occasional occurrence in the British Islands, writes thus:—"To the continent of Europe the present species straggles but rarely, . . . Greenland and Iceland, especially the latter, appear to be its true home." Mr. Sharpe, on the contrary, excludes Greenland from his definition of the habitat of *H. islandus*, including all the grey Falcons of that country under the specific designation of "*holbælli*," first proposed by him in the P. Z. S. for 1873, p. 415.

Fully adult specimens of Grey Jer-Falcons killed in Iceland and in Greenland vary considerably between themselves; but, independently of such individual variations, adult examples killed in Greenland generally (and, indeed, so far as I have observed, always †) differ, more or less (though

* Mr. Seebohm has been so good as to inform me that the species which, according to the rules of nomenclature, is (strictly speaking) entitled to the cognomen of "*islandus*," is the white Jer-Falcon (*H. candidans* of Gmelin), to which Latham applied the title of "*islandus*" in the supplement to his 'Synopsis,' p. 282, a year before Gmelin used it for the grey Falcon of Iceland. It seems to me, however (and I believe this to be Mr. Seebohm's opinion also), that the specific name of *candidans* having been so long in use for the white Jer-Falcon, and that of *islandus* for the grey Iceland bird, it is now too late, and would be too inconvenient, to correct an error which the usage of nearly a century may reasonably be held to have condoned.

† It is, however, quite possible that the Grey Falcons of Greenland may sometimes migrate to Iceland, as those of the White race are known to do regularly every winter.

usually the difference is but slight) from specimens of a corresponding age obtained in Iceland in the greater depth of the pale cross bars (measured from their upper to their lower edge) on the feathers of the median and greater wing-coverts, and also on the tertials, the scapulars, and the interscapular feathers. This difference, the only constant one which I can find between the two races, seems to be but a slender ground for erecting a distinct subspecies; but it may nevertheless be convenient to use for the Grey Falcon of Greenland the sub-specific term of *holbælli* proposed for it by Mr. Sharpe.

I have seen four Falcons which, from the curious admixture of white in their plumage, appear to me to be hybrids between either *H. holbælli* or *H. islandus* and *H. candicans*. Of these, three are apparently birds of the year; but the fourth is in very nearly fully adult plumage. This very curious specimen has been kindly lent to me by Col. Delmé Radcliffe, who informs me that the skin was given to him by the Maharajah Dhuleep Singh, by whom the bird was obtained from Iceland when in immature plumage, and in whose possession it lived till it had nearly completed its first moult. In this specimen the likeness to *H. candicans* appears on some of the scapulars that are on the left side of the back, on the coverts and remiges of the left wing (which latter are, however, unfortunately in an imperfect state, all the primaries being lost except the first and the basal portion of another), on most feathers of the upper tail-coverts, and on the external rectrices on the right side of the tail. All these portions of the plumage closely resemble in coloration and in pattern the same parts in the more darkly marked adults of *H. candicans*, whilst the remainder of the plumage agrees with that of the greyer adults of *H. holbælli*; probably, therefore, this Falcon was hatched in Greenland and captured in Iceland during its migration. Col. Radcliffe writes to me that he was informed by the Maharajah that when this bird was in its immature dress "it was rather a dark-brown specimen of a northern Falcon, and that before it moulted the Greenland feathers were more conspicuous than now."

I may add that the bill in this Falcon is of a tint interme-

diate between that which is usual in the bill of the white Jerfalcon and the darker colour of the bill in the grey races*.

Of the younger hybrids (as I suppose them to be) to which I have alluded, one specimen, said to be from Greenland, is preserved in the Norwich Museum: in this Falcon the entire plumage is that of a dark young bird of one of the grey races, except the remiges and most of the coverts of the left wing, the tertials of the right wing, the outermost rectrice on the left side of the tail, and the four contiguous to it, all of which resemble those of a lightly-marked *H. candicans* of similar age; in this bird the bill is darker than in Col. Radcliffe's Falcon, and, in fact, does not differ from the usual coloration observable in the bill of the Grey Falcons.

The two similar specimens to which I have alluded are in the collection of Mr. Hancock, who was so good as to allow me to examine them when in Newcastle a few years since.

According to a memorandum which I then made, one of them has all the rectrices on the left side, except the last, white, but with dark tips to two of them, and two similar feathers on the right side of the tail; it also has a feather resembling the plumage of *H. candicans* amongst the scapulars on the left side. The other one of these two Falcons is a very dark young bird, in which the only indication of hybridism is one primary resembling those of *H. candicans*.

The following memoranda of measurements have been taken from specimens in the British and Norwich Museums and from others kindly lent to me by Lord Lilford, Mr. Hancock, and Mr. Dresser:—

Grey Falcons obtained in Iceland.

	Wing.	Tarsus.	Middle toe s. u.
Presumed males (four)	15·20	2·35	2·20
	15·80	2·20	2·15
	15·00	2·35	2·10
	15·30	2·50	2·10

* Bills of an intermediate coloration, however, are not very unfrequent in specimens of *H. candicans*, especially in the more darkly-marked young birds.

Grey Falcons obtained in Iceland (continued).

	Wing.	Tarsus.	Middle toe <i>s. u.</i>
Presumed females (four) ..	*16·30	2·30	2·35
	16·40	2·30	2·20
	16·40	2·35	2·15
	16·35	2·40	2·20

Grey Falcons obtained in Greenland.

Presumed males (seven) ..	14·80	2·0	1·90
	to	to	to
	15·20	2·20	2·10
Presumed females (five) ..	15·85	2·20	2·00
	to	to	to
	16·70	2·30	2·10

It is unfortunate that the majority of the Grey Falcons preserved in collections have no authentic information attached to them as to the country from which they were obtained; but I believe that the localities of those of which I have given the measurements above may be relied upon as authentic. It is also in some cases impossible to say from what localities the originals of several of the plates which have been published of grey Arctic Falcons were obtained; but there are two cases in which I am able to supply this information. Mr. Dresser, who does not admit any subspecific distinction between *H. islandus* and *H. holbælli*, has given as the figure of the adult "Iceland Falcon" the portrait of a specimen killed in Greenland, which he has been so good as to lend to me for examination †; and Mr. Wolf, as I have already mentioned, has figured, in his 'Zoological Sketches' ‡, a specimen of *H. islandus* which was obtained in Iceland by the late Sir William Milner in 1851, and, having died ten years later in the Gardens of the Zoological Society, is now preserved in the Norwich Museum.

Mr. Dresser's specimen above referred to has the curious

* This specimen is remarkable for having the feathers of the lower back and upper tail-coverts cross-barred and tipped with pure white, instead of with pale bluish grey as is usually the case both in *H. islandus* and *H. holbælli*.

† *Vide* 'Birds of Europe,' vol. vi. pl. 371.

‡ Vol. i. pl. 35.

peculiarity of the inner web of one of the central rectrices being throughout mottled with two shades of grey instead of the usual transverse barring, which is quite regular and normal on all other portions of the tail.

Some of the specimens of *H. islandus* and of *H. holbælli* which I have examined lead me to believe that in both these races the pale transverse bars on the mantle are in most individuals less amply developed as the result of the first moult than is the case in subsequent years; and until these bars have been fully developed, the slight difference which exists between *H. islandus* and *H. holbælli* is, of course, not apparent. This remark applies to a Grey Falcon from Labrador, just attaining its adult dress, which Mr. Dresser has been so good as to lend me. This specimen, which appears to be a male, measures as follows:—Wing 14·30, tarsus 2·20, middle toe (*s. u.*) 1·90.

I may now briefly refer to the remaining member of the subgenus *Hierofalco* (*H. candicans*), a species in which individuals of the same age vary much more widely in the distribution and character of their markings than is the case with any other species of this subgenus—so much so, indeed, that it has been well observed by Professor Newton, in his edition of Yarrell's 'British Birds,' vol. i. p. 45, that "a very large series of examples may be compared without finding two which are exactly similar."

Professor Newton, in a paper inserted in the 4th series of the 'Annals and Magazine of Natural History,' vol. xii. p. 485, and Mr. Dresser, in his article upon *H. candicans* in the 'Birds of Europe,' vol. vi. p. 22, have recorded their dissent from the views propounded in Mr. Sharpe's Catalogue as to the sequence of changes incident to progressive age in this species; and in this dissent I concur.

As a slight contribution to the facts which have been observed bearing upon this subject, I may mention that in the year 1859 the Zoological Society became possessed of a living specimen of *H. candicans* in what I believe to have been its first year's plumage. In the course of that year Mr. Wolf was so good as to make for me an accurate coloured drawing

from life of this Falcon ; and in 1863 he again drew for me a portrait of the same individual, which had in the meanwhile attained its adult dress. The following is a comparison between the plumages of this Falcon in 1859 and in 1863, as shown in Mr. Wolf's two drawings.

1859.

1. All the dark markings brown.
2. The feathers on the crown of the head and nape each with a conspicuous shaft-mark.
3. A few slight shaft-marks on the cheeks and sides of the neck.
4. Each feather of the interscapulars and of the lesser wing-coverts brown, with a darker shaft-mark and a white edging ; the medium wing-coverts similar but with white bases ; the scapulars also similar, but the lower ones with either one or two white spots (when two are present, one being on each side of the shaft-mark) ; these spots are not confluent with the white edging.
5. The secondaries and tertials white with three rows of dark bars and a large dark subterminal patch on each feather of the tertials.
6. The primaries with somewhat extensive dark tips, and, above these, six transverse rows of dark markings, of which the uppermost row is imperfect.
7. Tail entirely white, except some very slight indications of rudimentary dark bars crossing the shaft-mark of the central rectrices.
8. Somewhat conspicuous dark shaft-marks on the breast, abdomen, and thighs.

1863.

1. All the dark markings brownish-black.
2. These shaft-marks much smaller and less conspicuous.
3. These shaft-marks gone, leaving the cheeks and sides of the neck pure white.
4. All these feathers pure white, except a slight indication of the dark shaft-mark and a subterminal heart-shaped spot, the latter expanding and approaching a crescent-shape on the median wing-coverts and lower scapulars.
5. A larger portion of each feather of the secondaries and tertials white, the dark markings having diminished in size, especially the subterminal patches on the tertials.
6. The primaries with the dark tips narrowly edged with white, and, above these, five transverse rows of dark markings, of which the uppermost row is imperfect.
7. Tail unaltered, except that the rudimentary cross-barring along the shafts of the central rectrices is more distinct and a little more extended.
8. Upper breast pure white, lower breast and abdomen not shown in the drawing ; shaft-marks on thighs decidedly narrower.

- | | |
|---|---|
| 9. Iris hazel. | 9. Iris a darker hazel. |
| 10. Bill pale bluish, darkest at the tips of the mandibles, and slightly tinged with pale yellow at the base of both mandibles. | 10. Bill similar, except that the tips of both mandibles are darker, and their bases (especially that of the upper mandible) more strongly tinged with pale yellow. |
| 11. Cere, pale yellowish blue. | 11. Cere, clear pale yellow. |
| 12. Feet, dull pale yellow. | 12. Feet unaltered. |

The late Mr. Gould considered that the difference between those specimens of *H. candicans* which show the most white in their plumage and those which exhibit the least, justifies the division of these species into a "light" and a "dark" race; but it has not been ascertained (so far as I know) that these peculiarities are hereditary, and the multiplicity of variously marked intermediate specimens seems to preclude a satisfactory separation between the "light" and "dark" races, even if these extremes of variation should prove to be hereditary.

Such extremes of variation in the case of both the immature and the adult birds have been admirably depicted from drawings by Mr. Wolf in Mr. Gould's 'Birds of Great Britain;' and excellent figures of a very dark adult and also of two light-coloured specimens, one adult and one immature, are given in Mr. Dresser's 'Birds of Europe.'

Mr. Dresser's figure of an adult *H. candicans* "in the darker and more strongly marked" phase of plumage exhibits the slight bluish tinge on the white portions of the upper surface, and also on the usually horn-coloured upper mandible, which is noticeable in some of the more profusely barred adult specimens, producing more or less of a similarity between such individuals and those specimens of *H. holbælli* in which the white interspaces between the dark cross bars of the mantle are especially conspicuous.

Some of the darker immature specimens of *H. candicans* are remarkable for the tinge of buff which pervades the lighter portions of their upper surface, and of which traces, especially about the edge of the wing, are also perceptible in some adult and partially adult specimens of *H. islandus* and *H. holbælli*, especially the latter. An immature male of *H. candicans* from Labrador, which is preserved in the Norwich

Museum, exhibits this peculiarity very strongly, the buff tint being most noticeable on the winglet and on the tertials, and the paler portions of the latter being of a rich fawn-colour, and not merely of a buffy white, like other pale parts of the upper surface.

So little is known as to the localities where *H. candicans* nests that I think it may be well, in conclusion, to call attention to a recent notice by Mr. H. C. Hart in the 'Zoo-logist' for 1880, p. 121, of an eyrie of *H. candicans* "amongst lofty cliffs near Cape Hayes, lat. $79^{\circ} 44'$," where the old birds were observed on 19th August 1875 and again on 21st August 1876.

Having now concluded my remarks on the Falcons, I may pass on to the final section of Mr. Sharpe's volume, in which the genera *Pandion* and *Polioaëtus* are grouped together under the heading of "Sub-order Pandiones."

I have already dealt with the genus *Polioaëtus* in my observations on the Sea-Eagles (*vide* Ibis, 1878, p. 455); and I then left for subsequent consideration that of *Pandion* as "a very peculiar and isolated form," though I think hardly sufficiently so to merit its elevation into a distinct "sub-order."

The Osprey, amongst other peculiarities, has been observed to possess some characteristics which seem to ally it to the Owls, and thus to justify its being located next to that group in any tabular arrangement. For further details upon this head I would refer to Sclater's translation of Nitzsch's 'Pterylography,' p. 54 (foot-note) and to the 'Recherches Anatomiques' on the Fossil Birds of France, by Milne-Edwards, vol. ii. p. 413*.

In 'The Ibis' for 1867, p. 464, I expressed the opinion that the genus *Pandion* is in reality composed of but one species, and that the Osprey is in fact referable to the same species throughout the entire area of its almost cosmopolitan range†. It must, however, be admitted that some slight

* I am indebted to the kindness of Professor Newton for calling my attention to the remarks of Mons. Milne-Edwards on this subject.

† Full details as to the geographical distribution of the Osprey will be

geographical variations do exist which have been recognized by ornithologists of eminence as sufficient grounds for subspecific distinction. The Osprey of America was thus separated by Gmelin from that of the Old World under the specific titles of "*carolinensis*"* ; and the Australasian Osprey at a later period received from Mr. Gould the distinctive appellation of "*leucocephalus*"† ; this latter race is regarded by Mr. Sharpe as a valid subspecies, which the former is not.

American Ospreys, on an average of specimens, show less brown on the upper part of the breast than those of the Old World ; and in some American adults the upper breast is a pure white without any admixture of brown ; this immaculate breast I have never seen in any non-American specimens, though some examples from the Old World are so sparingly marked with brown on the upper breast as to approach in this respect the white-breasted individuals of America.

Mr. Ridgway, who refers to this circumstance in his article upon the Osprey in 'The Land Birds of North America,' vol. iii. p. 184, has also the following remark : "In all the American specimens of both sexes the shafts of the tail-feathers are continuously white, whilst in European specimens they are clear white only at the roots or on the basal half." Some Old-World Ospreys, however, are very similar to the American in this respect, whilst in some other non-American specimens the shafts of the rectrices are entirely brown.

The Australasian race, to which the title of *leucocephalus* has been assigned, seems to me not to be separable from *P. haliaetus* by any constant character except its smaller size ; and even this is a somewhat variable characteristic.

The Osprey appears to be more abundant, and probably on that account more gregarious, in some parts of North America, than it is elsewhere. The authors of the 'Land Birds of North America' ‡ remark, "in some localities the Fish-hawk

found in the articles on this species in Newton's edition of Yarrell's 'British Birds,' and in Dresser's 'Birds of Europe.'

* *Vide* 'Systema Naturæ,' vol. i. p. 263.

† *Vide* P. Z. S. 1837, p. 138.

‡ *Vide* vol. iii. pp. 187, 189.

nests in large communities, as many as three hundred pairs having been observed nesting on one small island ;” and again, “it is most abundant from Long Island to the Chesapeake, and throughout this long extent of coast is very numerous, often breeding in large communities, to the number of several hundred pairs : away from the coast it is much less frequent, but is occasionally met with on the banks of the larger rivers and lakes, and in such instances usually in solitary pairs.”

The only approach to the gregarious habits of the American Ospreys which I have heard of in those of the Old World was related to me by that excellent observer of Australian ornithology, the late Mr. F. Strange, who informed me that on the coasts of Australia three or four pairs of Ospreys are sometimes to be found living in near proximity to each other.

The following measurements of Ospreys from various localities may be useful in showing the differences of size in this species in various parts of the world ; all these measurements have been taken by myself, except a few which are otherwise specified, and which are quoted from articles on the Osprey by Mr. Ridgway in the ‘Land Birds of North America,’ by Mr. Dresser in the ‘Birds of Europe,’ and by Col. Prjevalsky in his “Notes on the Birds of Mongolia,” published in Rowley’s ‘Ornithological Miscellany.’ The measurements so quoted I have indicated with the names of the several authorities ; and I have also mentioned the sex of the specimens when this has been ascertained.

	Wing. in.	Tarsus. in.	Middle toe <i>s. u.</i> in.
Canada	20·70	2·20	1·90*
Gallina, on the Mississippi . .	20·00	2·00	1·80*
Pennsylvania ♀, (<i>Ridgway</i>) .	20·50	2·15	1·70
Vancouver’s Land	19·60	2·20	1·90
Monterey, California	20·30	2·00	1·90*
San Diego, Southern Cali- fornia	20·70	2·50	2·20
San José, Southern Cali- fornia, ♂ (<i>Ridgway</i>) . .	20·00	2·15	1·90

	Wing. in.	Tarsus. in.	Middle toe <i>s. u.</i> in.
Chicuitan, Pacific coast of } Central America }	19.30	1.90	1.80*
Panama	20.10	2.30	2.10*
Honduras	19.80	2.00	1.80*
At sea, off the coast of Brazil	20.60	2.10	2.00*
Jamaica	19.30	2.00	1.90*
Island of St. Croix	19.00	2.10	1.90*
Shetland Islands, ♂	19.10	2.10	1.70
Norfolk, ♀	20.60	2.10	2.00
Norfolk, ♀	20.10	2.10	1.80
Sweden, ♂ (<i>Dresser</i>)	17.20	2.15	
Silesia, ♀ (<i>Dresser</i>)	20.10	2.30	
Tangier, ♀	20.80	2.40	2.00*
Egypt, ♀	20.10	2.10	2.00
Natal, ♂	18.80	2.20	2.00*
Natal, ♀	19.90	2.20	1.90*
Astrachan, ♂ (<i>Dresser</i>)	19.30	2.20	
India, ♂	19.00	2.10	1.85*
India (Malabar coast)	21.00	2.20	1.95
Kan-su, North-western } China (<i>Prejevalsky</i>) }	19.50	2.50	
Chefu, ♂	18.90	2.20	1.90
Ningpo, ♂	20.20	2.00	2.10
Amoy, ♀	20.70	2.20	1.90*
Amoy, ♀	20.40	2.00	1.90*
Hainan, ♂	19.70	2.20	1.80
Japan, ♂	19.60	2.10	1.90*
Japan (<i>Ridgway</i>)	17.50	2.15	1.60
Formosa	18.70	2.10	1.60*
Celebes (<i>Ridgway</i>)	15.20	2.00	1.60
Sangir Island (Celebes Sea) .	16.70	2.00	1.80
Gilolo	16.40	2.00	1.50
New Caledonia, ♂	16.30	1.90	1.50*
Australia	19.40	2.10	1.80*
Sydney, ♂	16.90	2.00	1.70*
Sydney, ♀	17.40	2.20	1.70*

I may add that the specimens in the above list marked with an asterisk are preserved in the Norwich Museum.

Amongst the many figures of the Osprey which have been published, I may mention those in Mr. Dresser's 'Birds of Europe,' representing an adult male killed at Astrachan in

April, an adult female from Silesia, a young female killed in October on the Volga, and a nestling from Astrachan *. Audubon has figured a male American Osprey †; and a figure of the American bird is also given by Wilson ‡; an adult female from Sumatra has been figured by Schlegel §; and an adult Australian specimen is represented in the plate given in Gould's 'Birds of Australia.'

The observations which I commenced in 'The Ibis' of 1875, in connexion with Mr. Sharpe's 'Catalogue of the Accipitres,' have now at length reached their conclusion; and I feel that many apologies are due to my readers for the prolixity and, I fear, the tediousness of this series of Notes. In tendering these apologies I would also offer my best thanks to the many ornithological friends who, by the liberal loan of specimens, as well as by affording me much important information, have greatly contributed to give my Notes any little value that they may possess. Amongst those who have thus assisted me are some who have passed away from amongst us since my task began, and whom my thanks can now no longer reach; but it is pleasant to recollect their ready aid and their friendly cooperation.

To Mr. Sharpe my thanks are also greatly due for the pleasure which the study of his pages has afforded me, and for his kindness in allowing me to confer with him on various points as to which I have occasionally felt doubtful.

I may add that, by the obliging permission of the Editors of 'The Ibis,' I intend to supplement the Notes that I have now concluded by a tabular index, which may, perhaps, prove a convenience, should any ornithological students chance hereafter to desire to refer to them.

* *Vide* vol. vi. pp. 386, 387.

† *Vide* B. N. Am. p. 81.

‡ *Vide* Am. Orn. v. pl. 5. fig. 1.

§ *Vide* Valkvogels, pl. 5. fig. 3.